



Xerox Docket No. D/A1375 *AP\$* *SR*

**PATENT APPLICATION**

THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Gary A. KNEEZEL

On Appeal from Group: 1723

Application No.: 10/707,535

Examiner: K. MENON

Filed: December 19, 2003

Docket No.: 112222

For: INTERNAL DIE FILTERS WITH MULTIPLE PASSAGEWAYS WHICH ARE  
FLUIDICALLY IN PARALLEL

**APPEAL BRIEF TRANSMITTAL**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Attached hereto is our Brief on Appeal in the above-identified application.

The Commissioner is hereby authorized to charge Deposit Account No. 24-0037 in the amount of Five Hundred Dollars (\$500.00) in payment of the Brief fee under 37 C.F.R. 41.20((b)(2)). In the event of any underpayment or overpayment, please debit or credit our Deposit Account No. 24-0037 as needed in order to effect proper filing of this Brief.

For the convenience of the Finance Division, two additional copies of this transmittal letter are attached.

Respectfully submitted,

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Date: October 23, 2006

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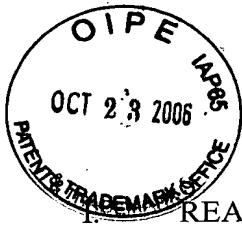
Docket No.: 112222

BRIEF ON APPEAL

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Appeal from Group 1700

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## TABLE OF CONTENTS

	<u>Page</u>
REAL PARTY IN INTEREST.....	1
II. STATEMENT OF RELATED APPEALS AND INTERFERENCES.....	2
III. STATUS OF CLAIMS .....	3
IV. STATUS OF AMENDMENTS.....	4
V. SUMMARY OF CLAIMED SUBJECT MATTER .....	5
VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL.....	6
VII. ARGUMENT.....	7
A. Patentable Weight Must Be Accorded to "etched into" and "formed by etching" .....	8
B. The Characteristics Of The Claimed Passages Are Not Necessarily Or Inherently Possessed By The Pores Of Goldsmith .....	9
C. The Claimed Passages Would Not Have Been Obvious In View Of The Pores Of Goldsmith .....	11
VIII. CONCLUSION.....	13
APPENDIX A - CLAIMS APPENDIX.....	A-1
APPENDIX B - EVIDENCE APPENDIX .....	B-1
APPENDIX C - RELATED PROCEEDINGS APPENDIX .....	C-1

**I. REAL PARTY IN INTEREST**

The real party in interest for this appeal and the present application is Xerox Corporation, by way of an Assignment recorded in the U.S. Patent and Trademark Office beginning at Reel 014208, Frame 0551.

**II. STATEMENT OF RELATED APPEALS AND INTERFERENCES**

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

**III. STATUS OF CLAIMS**

Claims 1-41 are pending.

Claims 1-5, 26-30 and 40-41 are rejected.

Claims 6-20 and 31-39 are withdrawn from consideration.

No claims are allowed.

No claims are cancelled.

**IV. STATUS OF AMENDMENTS**

No Amendment After Final Rejection has been filed.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

The subject matter of independent claims 1 and 26 is directed to an internal fluid filter formed in a substrate structure for filtering particles having specific sizes and shapes from fluidic mediums. As disclosed, the internal fluid filter comprises inlet side passageway 110 and outlet side passageway 120. (Fig. 1; paragraph [0038]). Inlet side passageway 110 and outlet side passageway 120 have extensions 112 and 122, respectively, which are interleaved. *Id.* Inlet side passageway 110 and outlet side passageway 120 are connected by multiple sets of filter pores 130 running between extensions 112 and 122. *Id.* The inlet side passageway 110 and outlet side passageway 120, including extensions 112 and 122, and filter pores 130 are formed by etching, such as, for example, orientation-dependent chemical etching (paragraph [0040]). Thus, the specific geometric dimensions of the various passageways, including the cross-sectional shape, are strictly controllable. For example, the passageways 110 and 120 and the filter pores 130 can be of triangular cross-section (Fig. 2; paragraph [0041]). In operation, particles contained in fluid entering into the inlet side passageways 110 are removed by the internal fluid filter and not contained in the fluid leaving the outlet side passageways 120. The particles removed are those of such sizes and shapes not able to pass through filter pores 130.

Regarding claim 1, the recited first and second passages find support in the disclosed inlet side passageway 110 and outlet side passageway 120, respectively, and the recited third passages find support in the disclosed filter pores 130.

Regarding claim 26, the recited first and second passages find support in the disclosed inlet side passageway 110 and outlet side passageway 120, respectively, the recited third and fourth passages find support in the disclosed extensions 112 and 122, respectively, and the recited fifth passages find support in the disclosed filter pores 130.

**VI. GROUNDΣ OF REJECTION TO BE REVIEWED ON APPEAL**

The following grounds of rejection are presented for review:

- 1) Claims 1-2, 4-5, 26, 28-29 and 40-41 are rejected under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over U.S. Patent No. 5,114,581 to Goldsmith et al. (Goldsmith).
- 2) Claims 3, 27 and 30 are rejected under 35 U.S.C. § 103(a) over Goldsmith.

## VII. ARGUMENT

Claim 1 is directed to first and second passages etched into a first substrate and third passages etched into either the first substrate or a second substrate, each third passage connecting one of the first passages with one of the second passages. Claim 26 is directed to first and second passages connected, respectively, to a plurality of third passages and a plurality of fourth passages. A plurality of fifth passages, formed by etching, each connect one of the third passages and one of the fourth passages.

In contrast, Goldsmith discloses a filtration device including a monolith 10 in which porous, longitudinal walls 14 are formed creating longitudinal passageways between the inlet end face 16 and outlet end face 18 of the monolith 10 (col. 3, lines 42-46; Fig. 1). Alternate ends of the longitudinal passageways are closed off by plugs 20 at the outlet end of inlet passages 22 and by plugs 24 at the inlet end of outlet passages 26 (col. 3, lines 46-51; Fig. 1). A thin, microporous membrane 28 having a pore size smaller than the pore size of the monolith 10 is formed on the surfaces of the longitudinal walls 14 (col. 3, lines 59-64). The thin, microporous membrane 28 can be formed by viscous coating, filtration, and slip casting (col. 5, lines 36-38).

Goldsmith is relied upon as allegedly disclosing all the features of claims 1-2, 4-5, 26, 28-29 and 40-41 and disclosing or suggesting all the features of claims 3, 27 and 30. However, the Patent Office's conclusions are not supported by the disclosure of Goldsmith.

In particular, Goldsmith fails to disclose first and second passages etched into a first substrate and third passages etched into one of the first substrate or a second substrate as recited in independent claim 1 or fifth passages formed by etching as recited in independent claim 26.

The Final Rejection alleges that Goldsmith discloses these features, but fails to establish where Goldsmith teaches these structural features of the claims. The structural

features "etched into" and "formed by etching" must be given patentable weight under both the MPEP's Examining Guidelines and applicable Federal Circuit case law.

**A. Patentable Weight Must Be Accorded to "etched into" and "formed by etching"**

"The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." MPEP § 2113 (citing *in re Garnero*, 412 F.2d 276, 279 (CCPA 1979)). The MPEP further recognizes that "interbonded by interfusion" was held in *in re Garnero* to limit structure of the claimed composite and that terms including "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations. *Id.*

Thus, the recited "etched into" and "formed by etching" must be analyzed to determine whether they must be accorded patentable weight and not summarily dismissed as in the Final Rejection.

Regarding product-by-process limitations, the PTO has the initial burden of establishing a *prima facie* rejection, which it may do by providing rationale tending to show that a prior art product is the same as, or similar to, the claimed product, even if the prior art product is produced by a different process. Thereafter, the Applicant will overcome the rejection by showing that the prior art does not necessarily or inherently possess the characteristics of the claimed product. *In re Thorpe*, 777 F.2d 695, 698 (Fed. Cir. 1985) ("We also agree that on the entirety of the record the PTO had correctly adduced a *prima facie* case, and that the burden had shifted to Thorpe, "to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product.") (citing *in re*

*Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980) and *In re Best*, 652 F.2d 1252, 1255 (CCPA 1977)).

Additionally, the MPEP states that "once a product appearing to be substantially identical is found and a 35 U.S.C. 102/103 rejection made, the burden shifts to the applicant to show an unobvious difference." MPEP § 2113.

Thus, while the PTO can allege a rejection of a product-by-process limitation by showing structure made by a different process, this is rebutted when the Applicant shows either that (1) the prior art product does not possess all the characteristics of the recited subject matter or that (2) the recited subject matter is nonobvious over the prior art product.

**B. The Characteristics Of The Claimed Passages Are Not Necessarily Or Inherently Possessed By The Pores Of Goldsmith**

One having ordinary skill in the art would readily know that an etched structure is structurally distinguishable from a non-etched structure, and that an "etched" passage is a structural limitation. As a direct result of being etched, the recited first, second and third passages of claim 1 ("etched into") and the fifth passages of claim 26 ("formed by etching"), expressly and inherently have the following characteristics.

- 1) The claimed passages inherently define predetermined and controlled paths having straight portions. As disclosed in the Specification, the recited passages can be formed by orientation-dependent chemical etching (paragraph [0040]). In order to prevent etching in areas to be retained, techniques to prevent the unwanted etching, such as by use of masks or the like, are used. Thus, the exact nature of the paths taken by the passages are inherently predetermined and controlled. More specifically, because orientation-dependent chemical etching follows etch planes, this inherently produces straight portions during etching.
- 2) The claimed passages inherently have a predetermined number.
- 3) The claimed passages extend and fluidically connect the larger inlet and outlet

passages (the first and second passages in claim 1 and the third and fourth passages in claim 26).

4) The claimed passages inherently have a predefined and non-varying cross-sectional shape. As disclosed in the Specification, etching produces characteristically shaped cross-sections. For example, orientation-dependent chemical etching produces passages having triangular cross sections (paragraph [0041]; Fig. 2). This is an inherent result of orientation-dependent chemical etching which self-terminates when the etch planes intersect (paragraph [0044]).

5) The claimed passages inherently have non-varying cross sectional dimensions. As an inherent aspect of etching, measures are used to prevent an etching process from removing too much material or removing material from locations where such removal is undesired. It is inherent from such control measures that the dimensions of the passage cross sections are predetermined and regular. The embodiment of Figs. 1-2 is the result of orientation-dependent chemical etching (paragraph [0040]). Thus, such methods include the use of masks. Given a predetermined mask, orientation-dependent chemical etching self-terminates when the etch planes meet (paragraph [0044]). As the etch planes are at specific angles, this results in cross-sections having inherently non-varying dimensions in relation to cross-sections at other locations.

6) The claimed passages do not merge or split, unless predetermined and controlled to do so by design.

In contrast, Goldsmith discloses the pores of the microporous membrane 28 can be formed by viscous coating, filtration, or slip coating (col. 5, lines 36-38). In all of these disclosed processes, the pores of the resulting deposited microporous membrane 28 explicitly and inherently have the following characteristics.

1) The pores of the microporous membrane 28 inherently define irregular paths.

2) The pores of the microporous membrane 28 inherently number in the thousands or millions and inherently are not of an exact, predefined number.

3) The pores of the microporous membrane 28 explicitly do not extend between the inlet passages 22 and outlet passages 26, requiring the pores in the longitudinal walls 14 to complete the fluidic connection between the inlet passages 22 and outlet passages 26 (see col. 3, line 59-col. 4, line 1; Fig. 1).

4) The pores of the microporous membrane 28 inherently vary in cross-sectional shape.

5) The pores of the microporous membrane 28 inherently vary in cross-sectional dimension, both from pore to pore and within the same pore at different locations.

6) The pores of the microporous membrane 28 inherently include multiple pores joining together at common points and multiple pores diverging from common points.

Because multiple characteristics explicit and inherent in the claimed internal die filter are not necessarily or inherently possessed by the back-flushable filtration device of Goldsmith as discussed above, the claims are patentable over Goldsmith.

**C. The Claimed Passages Would Not Have Been Obvious In View Of The Pores Of Goldsmith**

Both claim 1 and claim 26 require passages having etched structure. In claim 1, the first, second and third passages are required to be "etched into" one of the first and second substrates. In claim 26, the fifth passages are required to be "formed by etching."

The claimed etched features inherently provide the first, second, and third passages (claim 1) and the fifth passages (claim 26) with structure having the characteristics that the resulting passages are regular, conform to tight tolerances, have predefined and regular paths, have a predefined and regular cross-sectional shape, have predefined and regular cross-

sectional dimensions, and are of a predefined number. One skilled in the art could readily ascertain whether a passage had been formed by etching.

In contrast, Goldsmith discloses a porous monolith 10 having inlet side passages 22 and outlet side passages 26. A microporous membrane 28 is formed on the longitudinal walls 14. Goldsmith discloses that the microporous membrane 28 is formed by any of viscous coating, filtration, or slip coating (col. 5, lines 36-38).

The pores of Goldsmith inherently possess the characteristics that the pores have irregular and uncontrolled paths, cannot be controlled to have tight tolerances, do not have predetermined or regular cross-sectional shapes, do not have predefined or regular cross-sectional dimensions, and are not of a predefined or controllable number. One skilled in the art would readily agree that Goldsmith does not have (and does not disclose or suggest) etched passages.

The processes used in Goldsmith and disclosed in Applicant's Specification are vastly different and result in vastly different structure. Application of a porous material to another porous material, by any of the methods disclosed in Goldsmith, is incapable of creating passages which have predetermined and regular paths, a predetermined and regular cross-sectional shape, a predetermined and regular cross-sectional size, which conform to tight tolerances, and which are of a predetermined number. Thus it would not have been obvious for one of ordinary skill in the art to modify the disclosure of Goldsmith to result in pores having the structure and characteristics of the claimed passages because one of ordinary skill in the art would not have been motivated to produce the claimed passages from the Goldsmith disclosure.

**VIII. CONCLUSION**

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1-5, 26-30 and 40-41 are in condition for allowance. For all of the above reasons, Appellant respectfully requests this Honorable Board to reverse the rejections of claims 1-5, 26-30 and 40-41.

Respectfully submitted,



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**APPENDIX A - CLAIMS APPENDIX**

**CLAIMS INVOLVED IN THE APPEAL:**

1. An internal fluid filter, comprising:
  - a first substrate;
  - a second substrate;
  - a plurality of first and second passages etched into the first substrate; and
  - a plurality of third passages etched into one of the first substrate and the second substrate, each third passage extending between and fluidly connected to one of the first passages and one of the second passages, wherein fluid can flow into the one of the first and second passages, from the one of the first and second passages into the third passages, and from the third passages into the other of the first and second passages, such that particles having a size greater than that which can pass through the third passages are filtered from the fluid.
2. The internal fluid filter of claim 1, further comprising:
  - a fourth passage fluidly connected to the plurality of first passages; and
  - a fifth passage fluidly connected to the plurality of second passages.
3. The internal fluid filter of claim 2, wherein a microfluidic device is connected to one of the fourth and fifth passages.
4. The internal fluid filter of claim 2, wherein a fluid source is connected to one of the fourth and fifth passages.
5. A fluid system comprising:
  - a fluid source;
  - a fluid sink and

the internal fluid filter of claim 2, wherein the fluid source is connected to one of the fourth and fifth passages and the fluid sink is connected to the other of the fourth and fifth passages.

26. An internal fluid filter, comprising:

at least one first passage;

at least one second passage;

a plurality of third passages, each third passage connected to one of the at least one first passage;

a plurality of fourth passages, each fourth passage connected to one of the at least one second passage; and

a plurality of fifth passages, each fifth passage formed by etching and extending between and fluidly connected to one of the third passages and one of the fourth passages, wherein fluid can flow into one of the first and second passages, from the one of the first and second passages into one of the plurality of third passages and the plurality of fourth passages, respectively, from the one of the plurality of third passages and the plurality of fourth passages into the plurality of fifth passages, from the fifth passages into the other of the plurality of third passages and the plurality of fourth passages, and from the one of the plurality of third passages and the plurality of fourth passages into the other of the first and second passages, such that particles having a size greater than that which can pass through the fifth passages are filtered from the fluid.

27. The internal fluid filter of claim 26, wherein at least one microfluidic device is connected to at least one of the at least one first passage or to at least one of the at least one second passage.

28. The internal fluid filter of claim 26, wherein at least one fluid source is connected to at least one of the at least one first passage or to at least one of the at least one second passage.

29. A fluid system comprising:

at least one fluid source;

at least one fluid sink; and

the internal fluid filter of claim 26, wherein the at least one fluid source is connected to at least one of the at least one first passage or to at least one of the at least one second passage and the at least one fluid sink is connected to the other of at least one of the at least one first passage or to at least one of the at least one second passage.

30. The fluid system of claim 29, wherein at least one of the at least one fluid source and the at least one fluid sink is a microfluidic device.

40. The internal fluid filter of claim 1, wherein the plurality of third passages are fluidically parallel to one another.

41. The internal fluid filter of claim 26, wherein the plurality of third passages are fluidically parallel to one another.

**APPENDIX B - EVIDENCE APPENDIX**

NONE

**APPENDIX C - RELATED PROCEEDINGS APPENDIX**

NONE